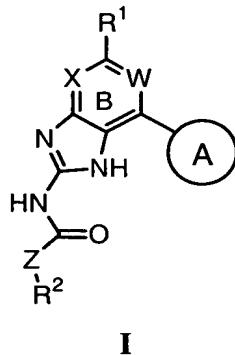


We claim:

1. A compound of formula I:



I

or a pharmaceutically acceptable salt thereof, wherein:

W is selected from nitrogen, CH, or CF;

X is selected from CH or CF;

Z is O or NH;

R¹ is phenyl or a 5-6 membered heteroaryl ring having 1-3 heteroatoms independently selected from oxygen, nitrogen, or sulfur, wherein:

R¹ is substituted with 0-3 groups independently selected from -(T)<sub>y</sub>-Ar, R', oxo, C(O)R', CO<sub>2</sub>R', OR', N(R')<sub>2</sub>, SR', NO<sub>2</sub>, halogen, CN, C(O)N(R')<sub>2</sub>, NR'C(O)R', SO<sub>2</sub>R', SO<sub>2</sub>N(R')<sub>2</sub>, or NR'SO<sub>2</sub>R';

y is 0 or 1;

T is a straight or branched C<sub>1-4</sub> alkylidene chain, wherein one methylene unit of T is optionally replaced by -O-, -NH-, or -S-;

each R' is independently selected from hydrogen, C<sub>1-4</sub> aliphatic, or a 5-6 membered saturated, unsaturated, or aryl ring having 0-3 heteroatoms independently selected from nitrogen, oxygen, or sulfur, wherein:

R' is substituted with 0-3 groups independently selected from halogen, oxo, R°, N(R°)<sub>2</sub>, OR°, CO<sub>2</sub>R°, NR°C(O)R°, C(O)N(R°)<sub>2</sub>, SO<sub>2</sub>R°, SO<sub>2</sub>N(R°)<sub>2</sub>, or NR°SO<sub>2</sub>R°, wherein:

each R° is independently selected from hydrogen, C<sub>1-4</sub> aliphatic, or a 5-6 membered saturated, unsaturated, or aryl ring having 0-3 heteroatoms independently selected from nitrogen, oxygen, or sulfur, and wherein:

two substituents on adjacent positions of R<sup>1</sup> may be taken together to form a 5-7 membered saturated, partially unsaturated, or aryl ring having 0-3 heteroatoms independently selected from nitrogen, oxygen, or sulfur;

Ar is a 3-8 membered saturated, unsaturated, or aryl ring, a 3-7 membered heterocyclic ring having 1-3 heteroatoms independently selected from nitrogen, oxygen, or sulfur, or a 5-6 membered heteroaryl ring having 1-3 heteroatoms independently selected from nitrogen, oxygen, or sulfur, wherein:

Ar is substituted with 0-3 groups independently selected from R', oxo, CO<sub>2</sub>R', OR', N(R')<sub>2</sub>, SR', NO<sub>2</sub>, halogen, CN, C(O)N(R')<sub>2</sub>, NR'C(O)R', SO<sub>2</sub>R', C(O)R', SO<sub>2</sub>N(R')<sub>2</sub>, or NR'SO<sub>2</sub>R';

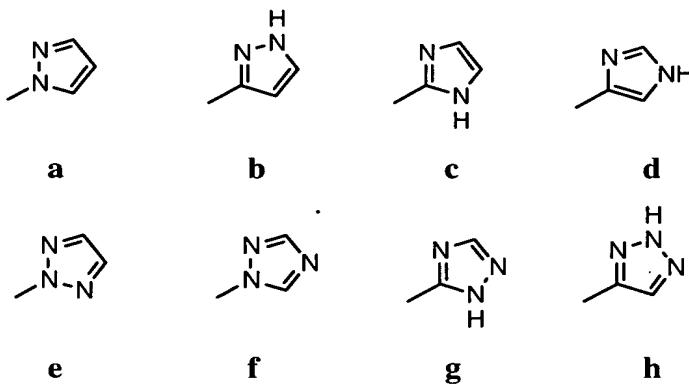
R<sup>2</sup> is selected from hydrogen or a C<sub>1-3</sub> aliphatic group; and

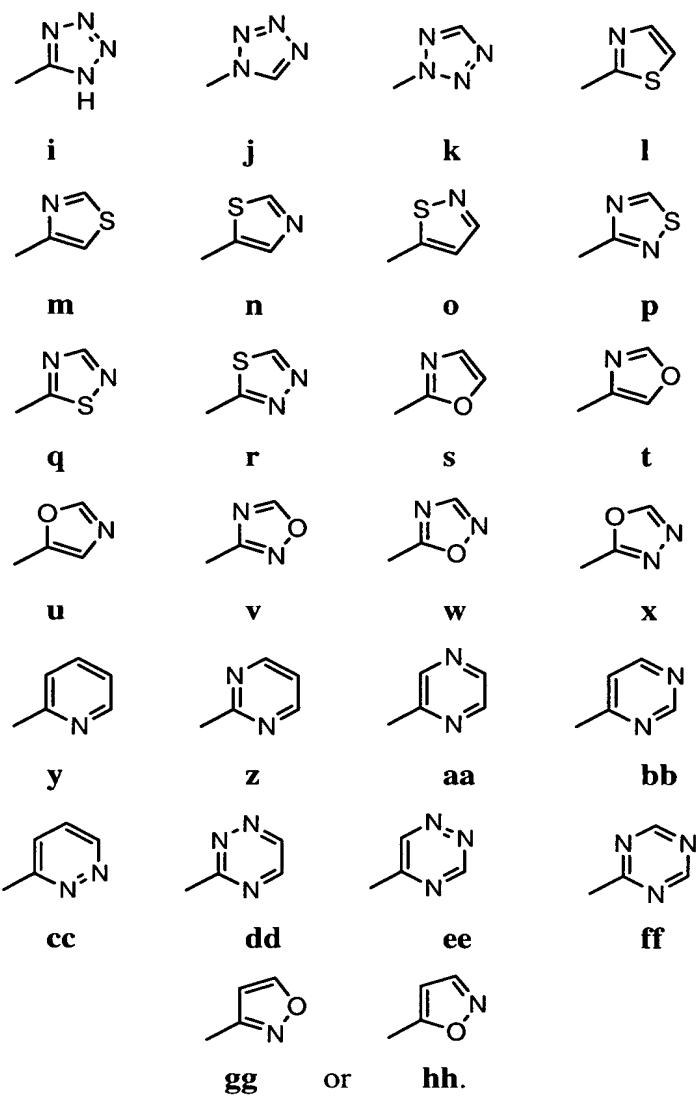
Ring A is a 5-6 membered heteroaryl ring having 1-4 heteroatoms independently selected from nitrogen, oxygen, or sulfur, provided that said ring has a hydrogen-bond acceptor in the position adjacent to the point of attachment to Ring B, wherein:

Ring A is substituted with 0-3 groups independently selected from R', oxo, CO<sub>2</sub>R', OR', N(R')<sub>2</sub>, SR', NO<sub>2</sub>, halogen, CN, C(O)N(R')<sub>2</sub>, NR'C(O)R', SO<sub>2</sub>R', SO<sub>2</sub>N(R')<sub>2</sub>, or NR'SO<sub>2</sub>R', and wherein:

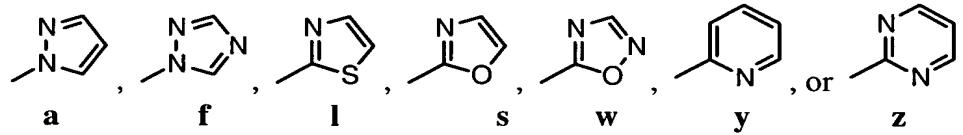
two substituents on adjacent positions of Ring A may be taken together to form a 5-7 membered saturated, partially unsaturated, or aryl ring having 0-3 heteroatoms independently selected from nitrogen, oxygen, or sulfur.

2. The compound according to claim 1, wherein Ring A is selected from the following optionally substituted rings:





3. The compound according to claim 2, wherein Ring A is an optionally substituted ring selected from rings **a**, **f**, **l**, **s**, **w**, **y**, or **z**:



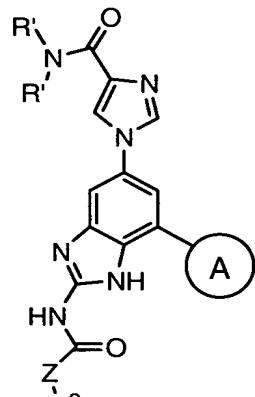
4. The compound according to claim 1, wherein:  
 $R^1$  is selected from an optionally substituted phenyl or 5-6 membered heteroaryl ring having 1-2 nitrogens.

5. The compound according to claim 4, wherein R<sup>1</sup> is an optionally substituted ring selected from pyrid-2-yl, pyrid-3-yl, pyrid-4-yl, pyrimidin-2-yl, pyrimidin-4-yl, pyrimidin-5-yl, pyrimidin-6-yl, imidazol-1-yl, imidazol-2-yl, imidazol-4-yl, or imidazol-5-yl.

6. The compound according to claim 5, wherein R<sup>1</sup> is substituted with 0-2 groups independently selected from halogen, oxo, R', CO<sub>2</sub>R', OR', N(R')<sub>2</sub>, SR', C(O)N(R')<sub>2</sub>, NR'C(O)R', SO<sub>2</sub>R', SO<sub>2</sub>N(R')<sub>2</sub>, or NR'SO<sub>2</sub>R'.

7. The compound according to claim 6, wherein R<sup>2</sup> is selected from methyl, ethyl, isopropyl, or cyclopropyl.

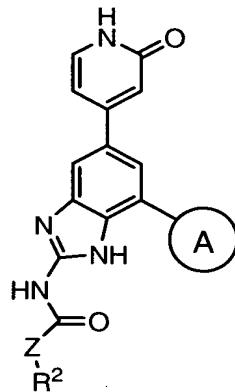
8. The compound according to claim 1, wherein said compound is of formula **II-a**:



**II-a**

or a pharmaceutically acceptable salt thereof.

9. The compound according to claim 1, wherein said compound is of formula **III**:



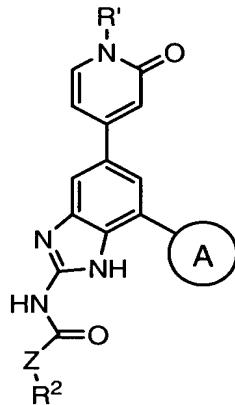
III

or a pharmaceutically acceptable salt thereof, wherein:

the pyridone ring depicted is substituted with 0-2 groups independently selected from halogen, oxo, R', CO<sub>2</sub>R', OR', N(R')<sub>2</sub>, SR', C(O)N(R')<sub>2</sub>, NR'C(O)R', SO<sub>2</sub>R', SO<sub>2</sub>N(R')<sub>2</sub>, or NR'SO<sub>2</sub>R'.

10. The compound according to claim 9, wherein said compound is of formula

### III-a:



III-a

or a pharmaceutically acceptable salt thereof.

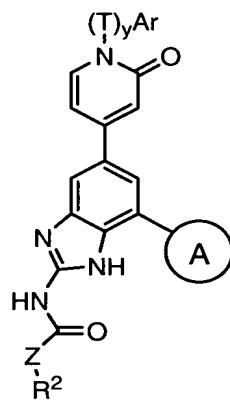
11. The compound according to claim 10, wherein:

R' is hydrogen or C<sub>1-4</sub> aliphatic, and wherein:

R' is optionally substituted with phenyl or pyridyl.

12. The compound according to claim 1, wherein said compound is of formula

IV:



**IV**

or a pharmaceutically acceptable salt thereof.

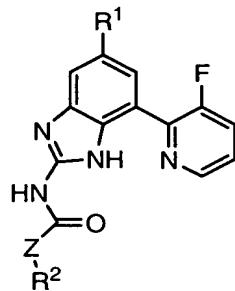
13. The compound according to claim 12, wherein Ar is an optionally substituted 5-6 membered saturated ring having 1-2 heteroatoms independently selected from oxygen, nitrogen, or sulfur.

14. The compound according to claim 12, wherein Ar is an optionally substituted 5-membered heteroaryl ring having 1-3 heteroatoms independently selected from nitrogen, oxygen, or sulfur.

15. The compound according to claim 12, wherein Ar is an optionally substituted 6-membered heteroaryl ring having 1-3 nitrogens.

16. The compound according to claim 12, wherein Ar is optionally substituted phenyl.

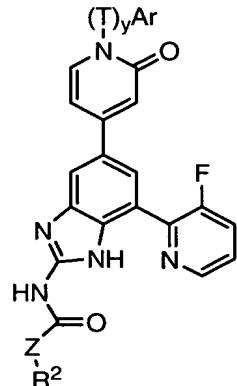
17. The compound according to claim 1, wherein said compound is of formula V:



**V**

or a pharmaceutically acceptable salt thereof.

18. The compound according to claim 17, wherein said compound is of formula VI:

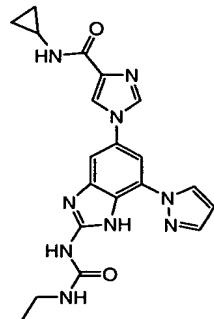


VI

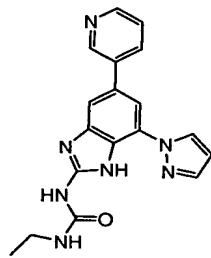
or a pharmaceutically acceptable salt thereof.

19. The compound according to any one of claims 8, 11, 12, or 17 wherein R<sup>2</sup> is ethyl.

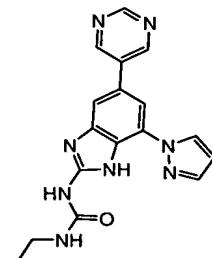
20. A compound selected from the group consisting of:



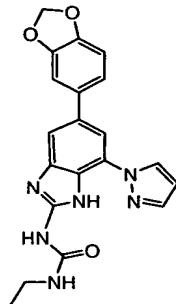
I-1



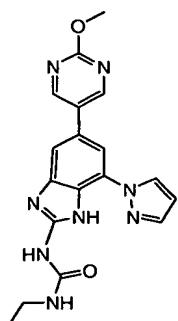
I-2



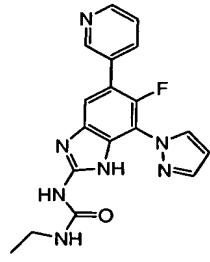
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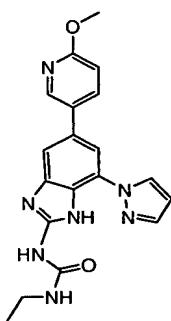
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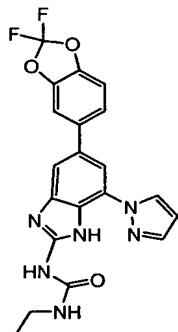
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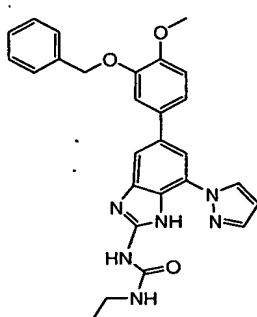
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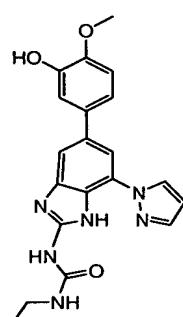
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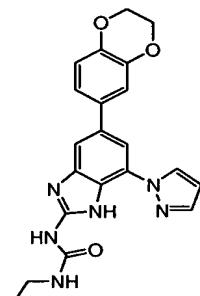
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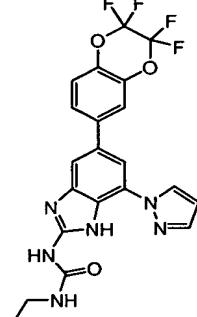
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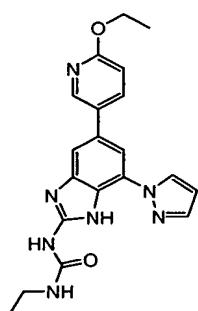
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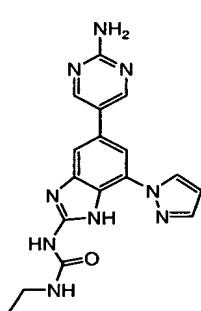
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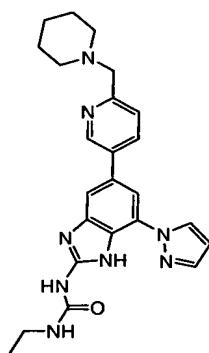
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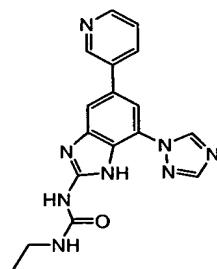
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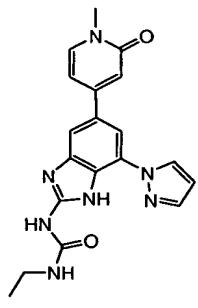
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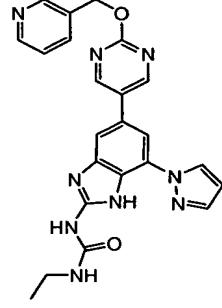
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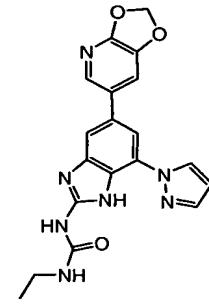
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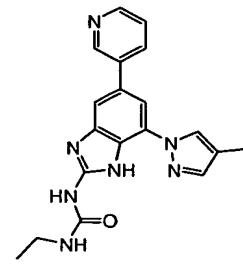
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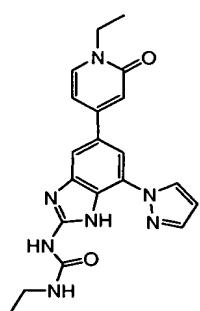
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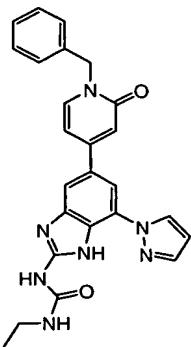
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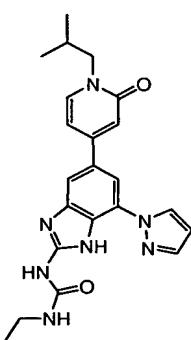
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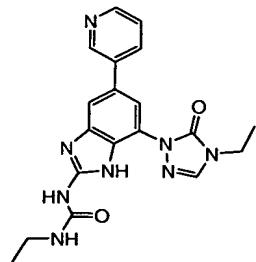
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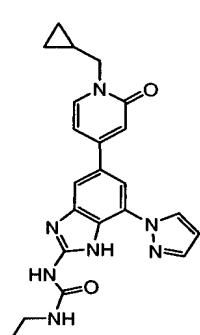
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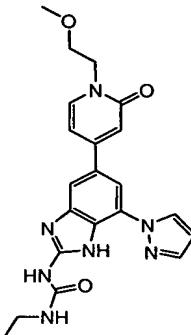
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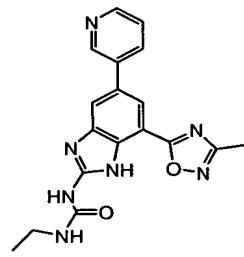
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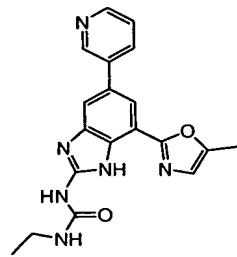
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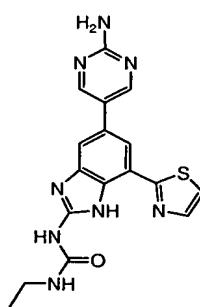
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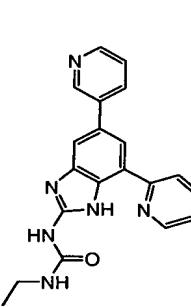
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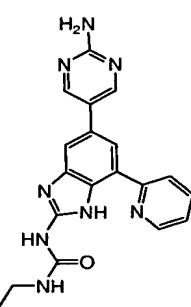
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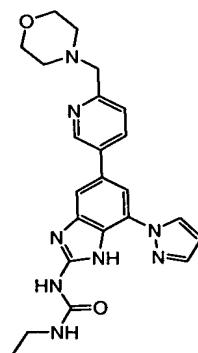
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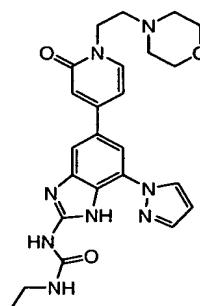
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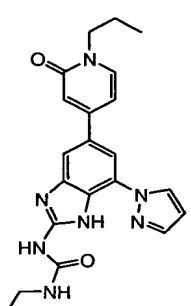
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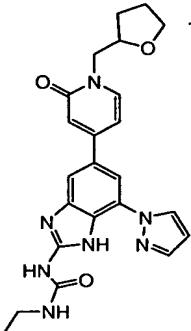
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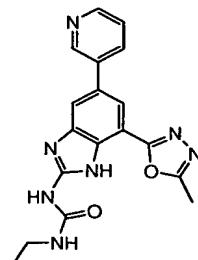
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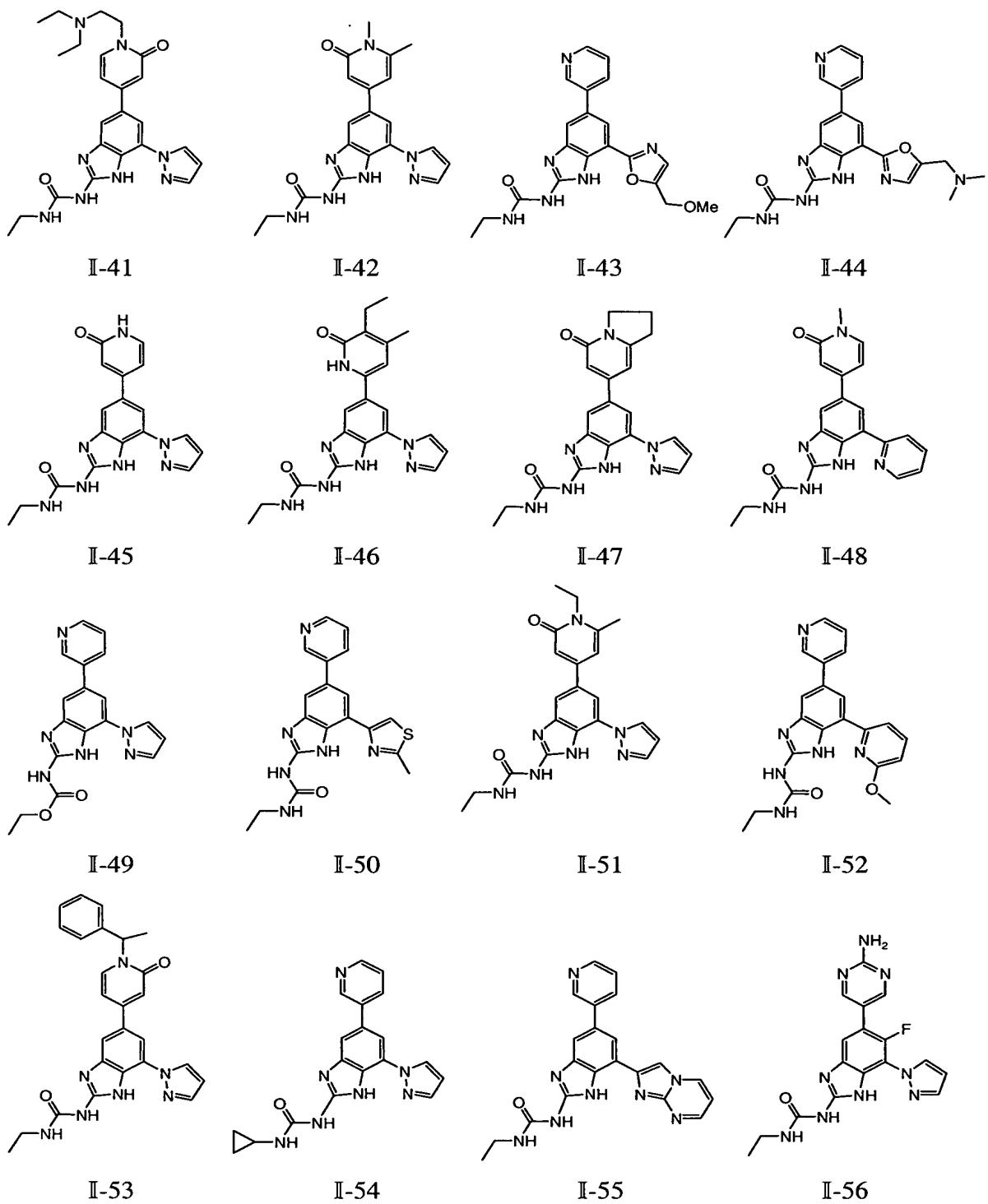
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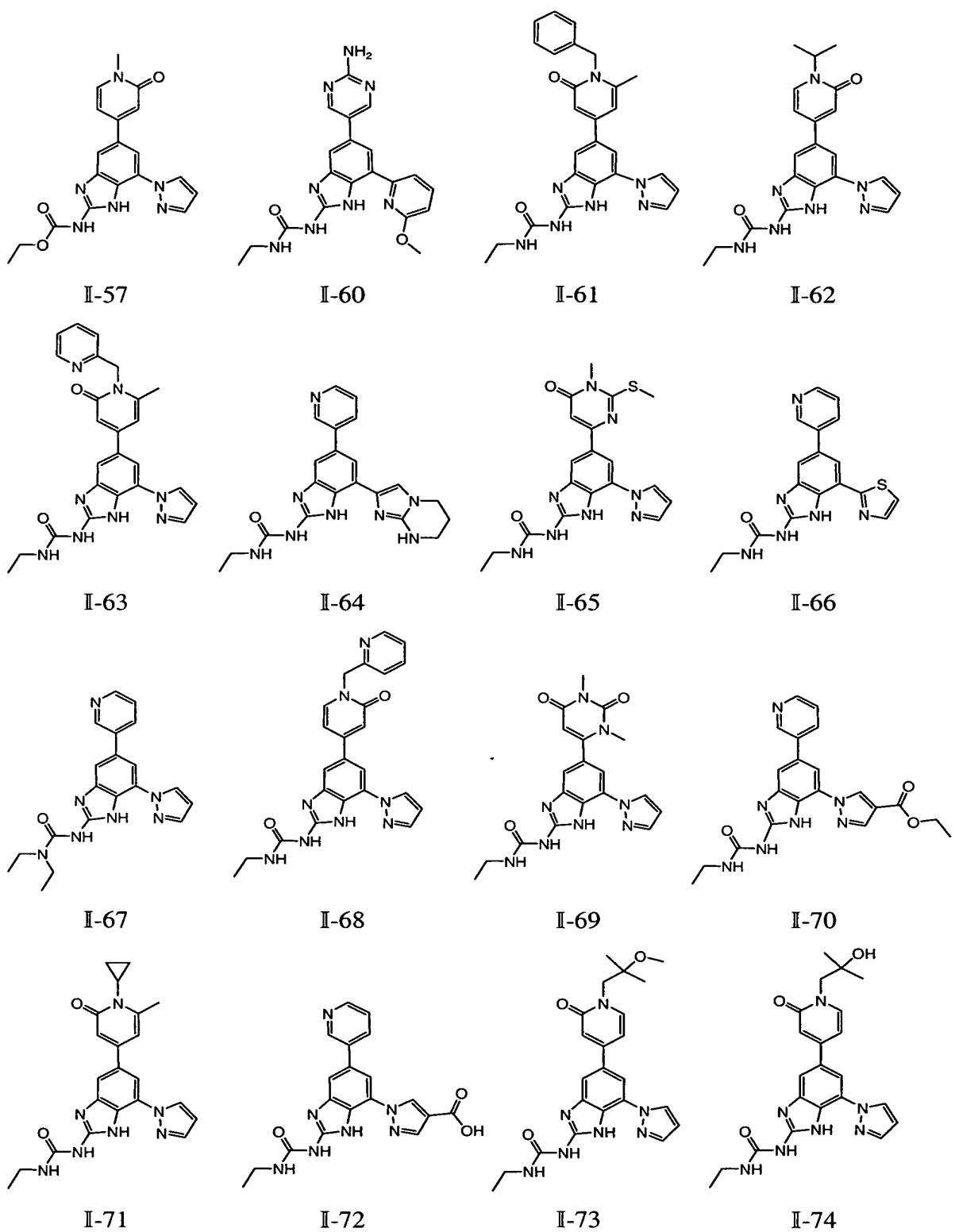


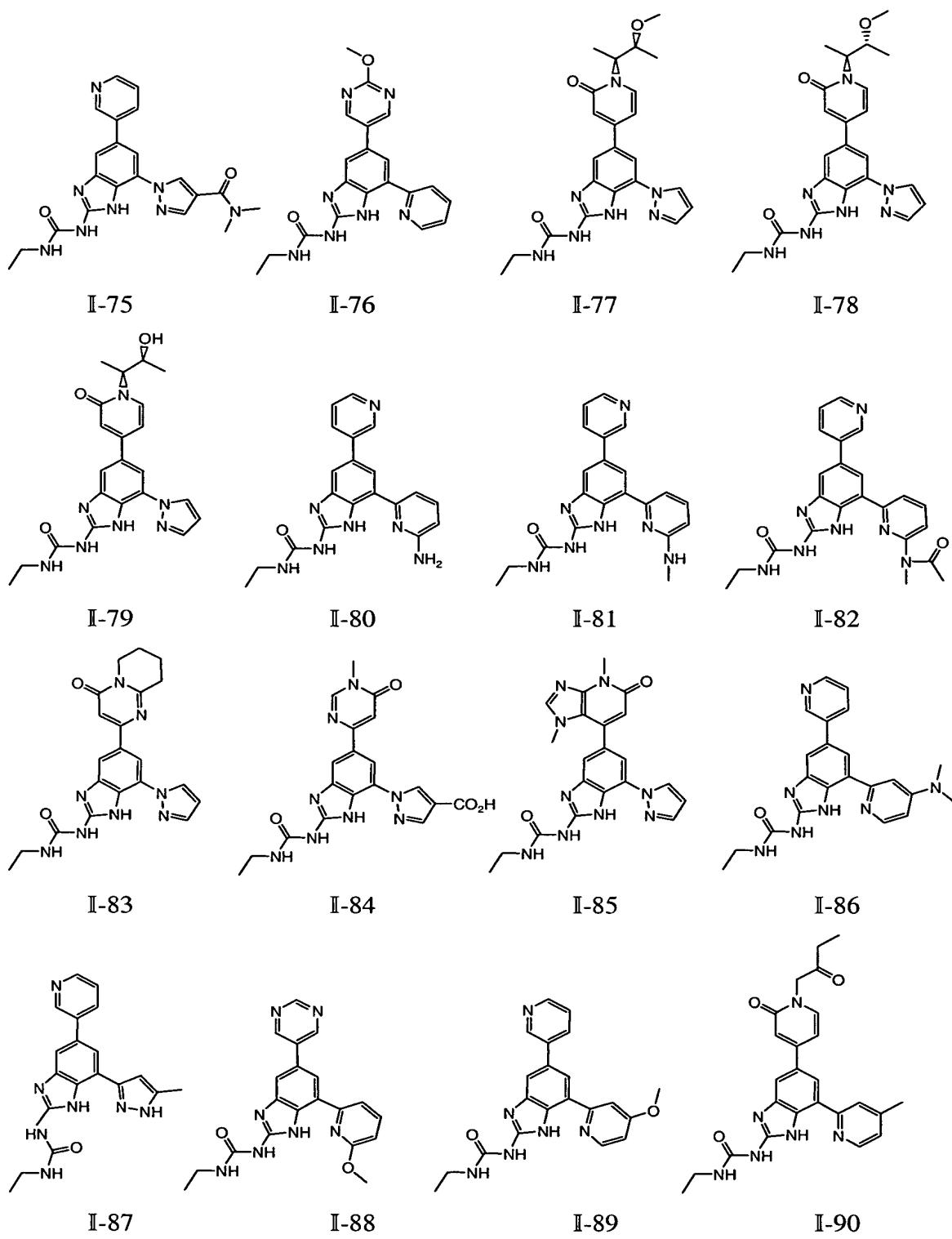
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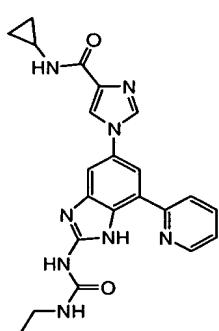


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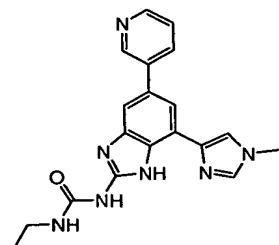




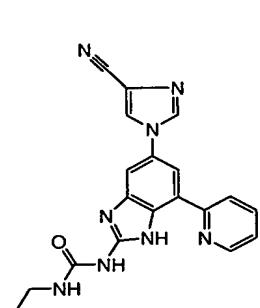




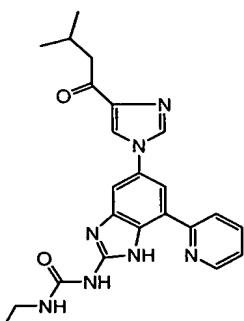
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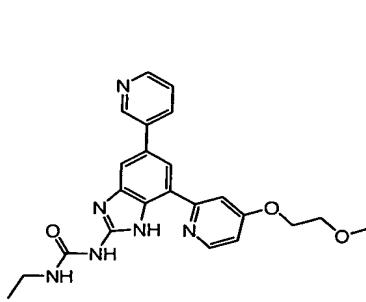
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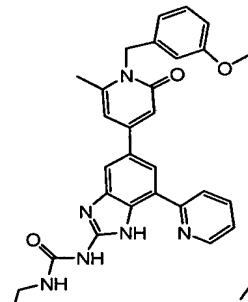
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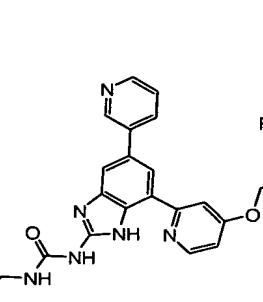
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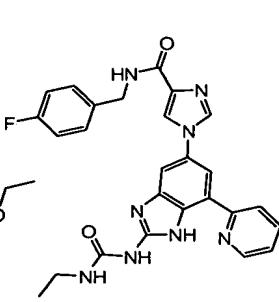
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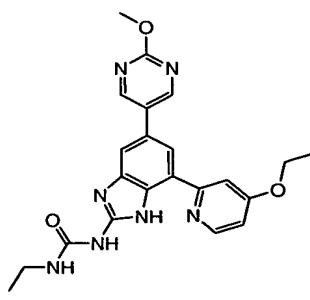
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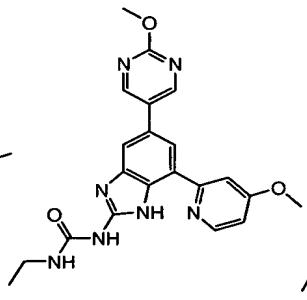
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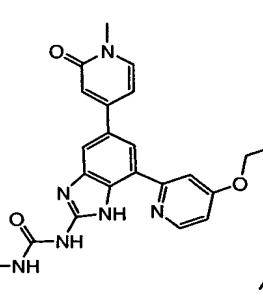
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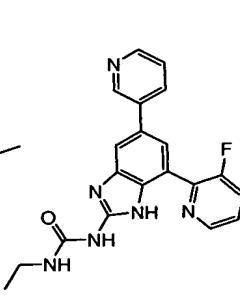
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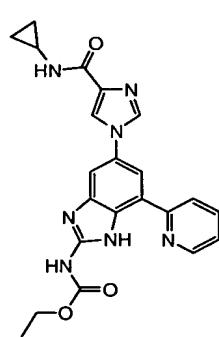
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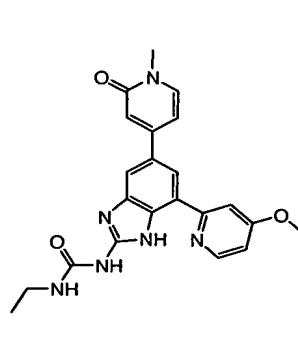
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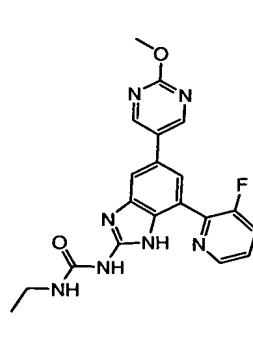
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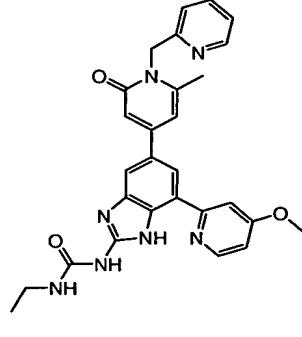
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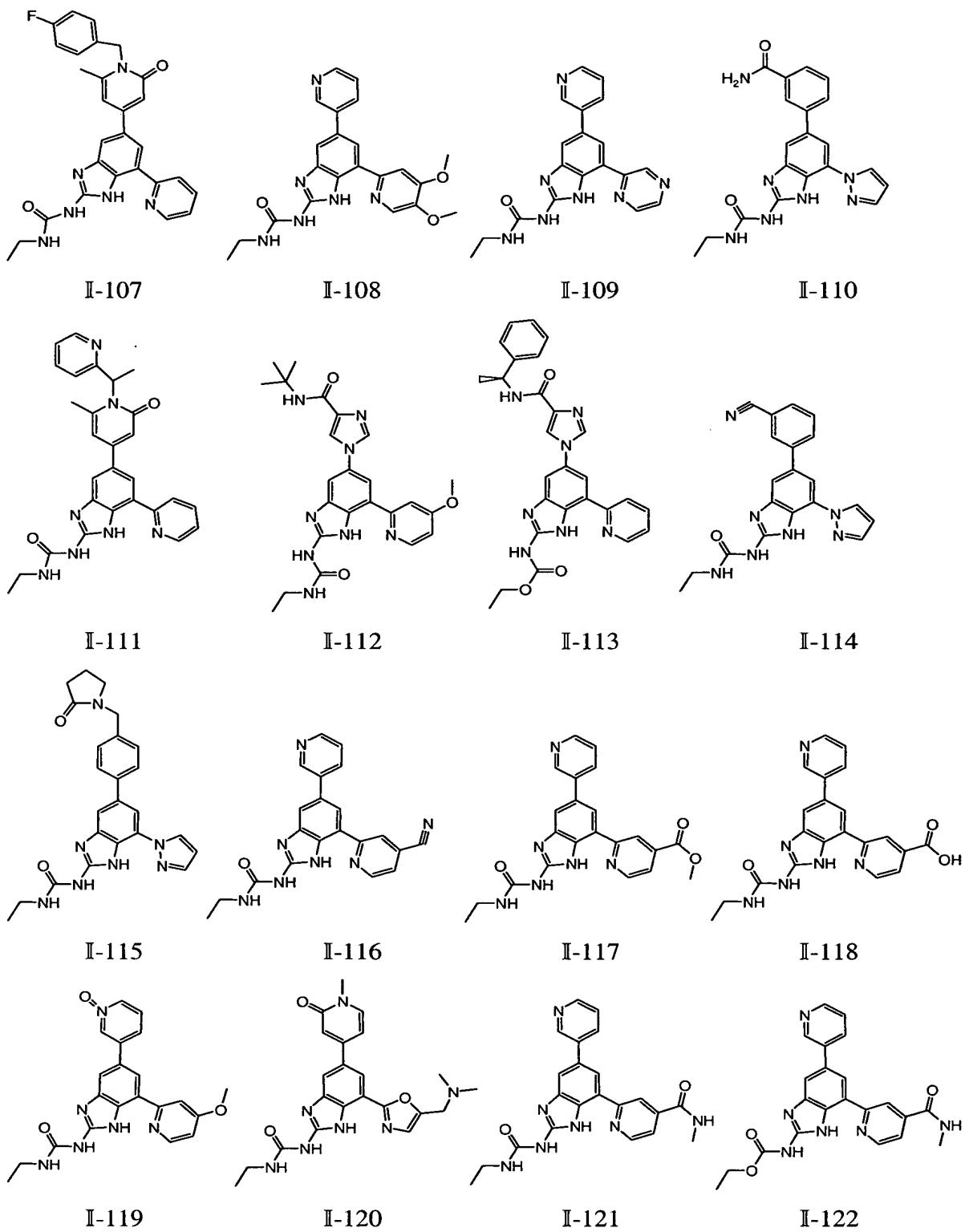
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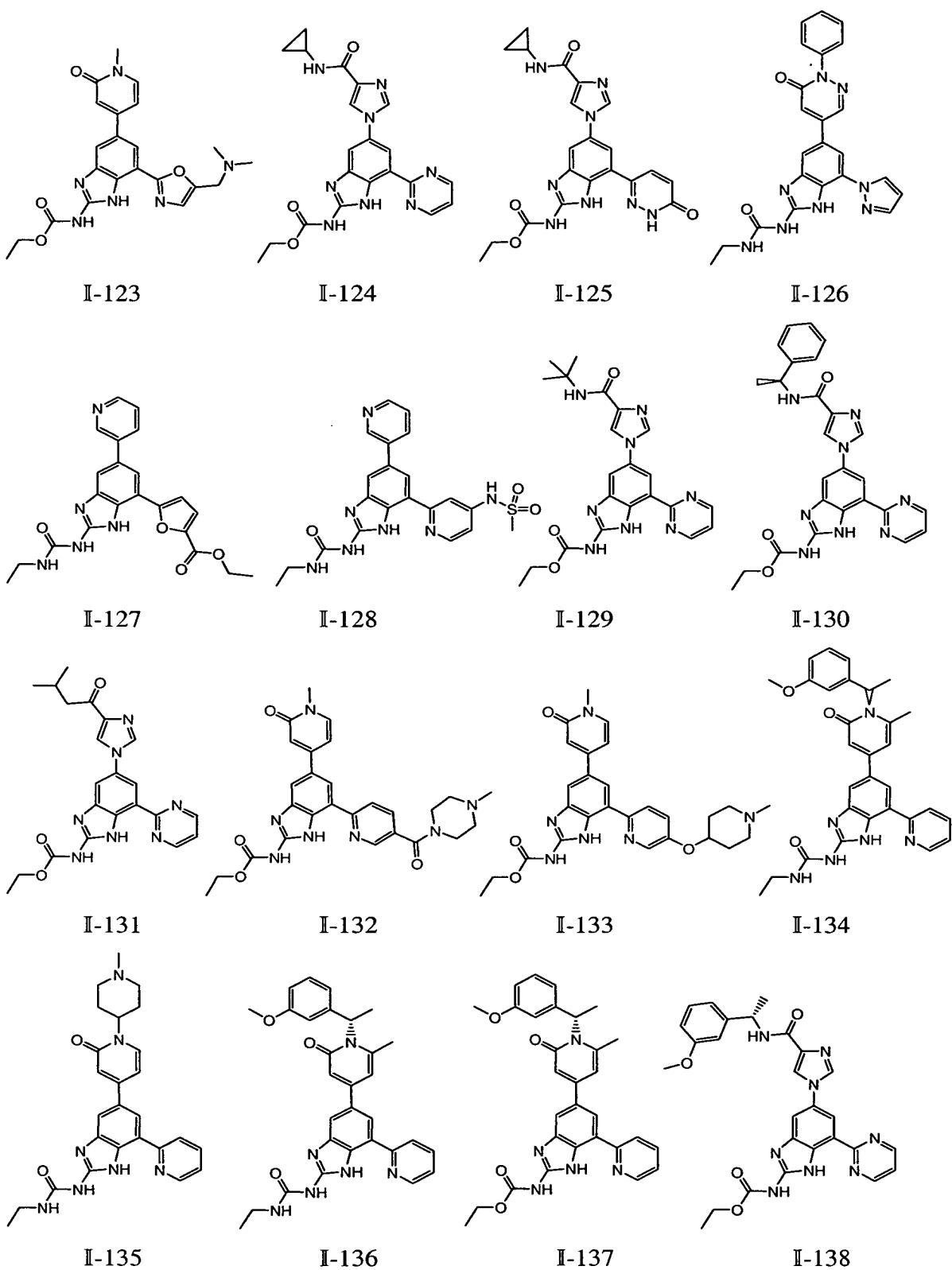


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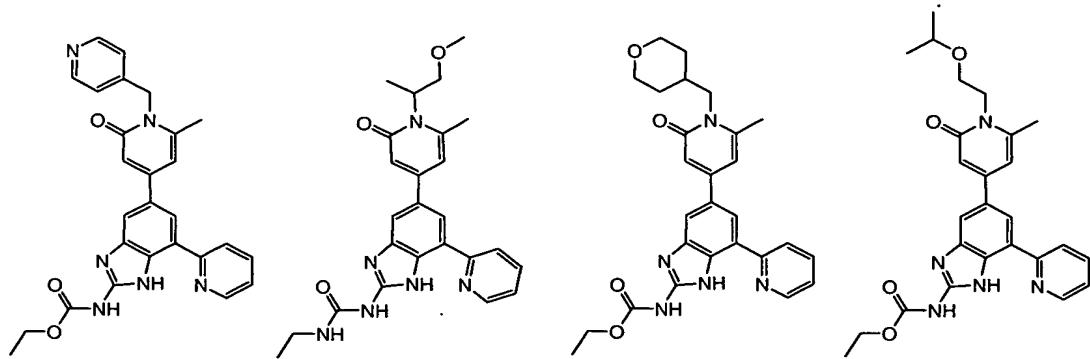


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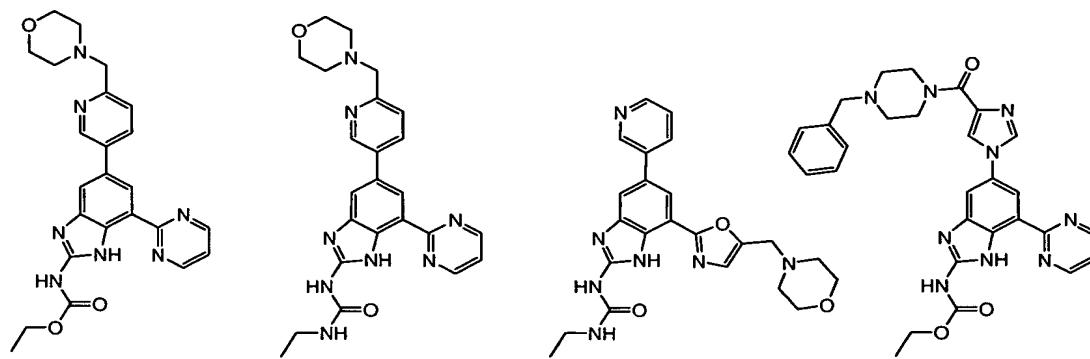


II-155

II-156

II-157

II-158

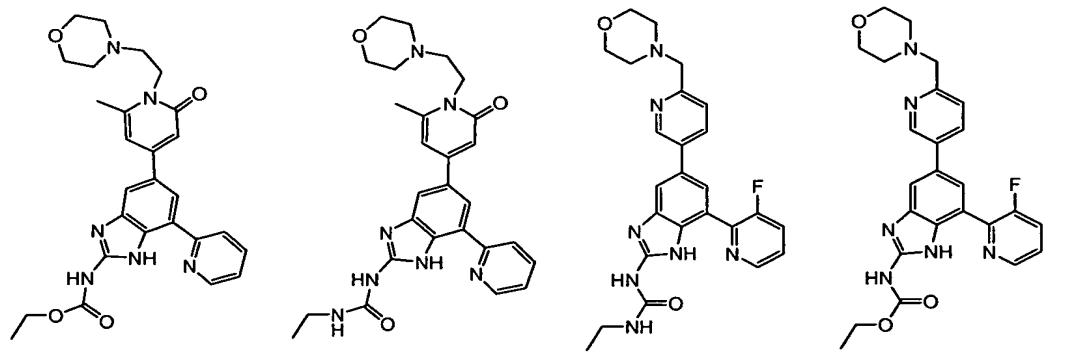


II-159

II-160

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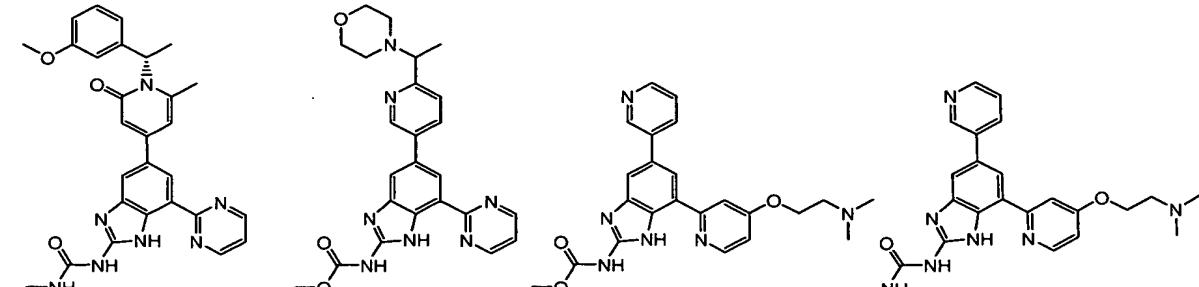


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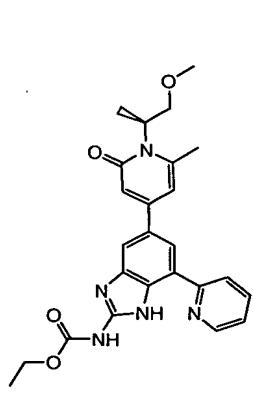


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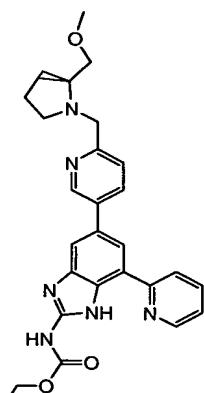
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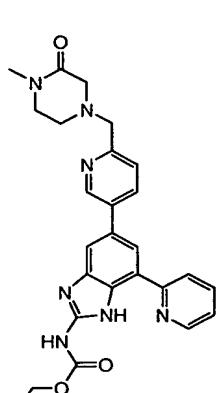
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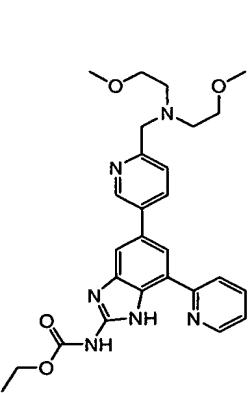
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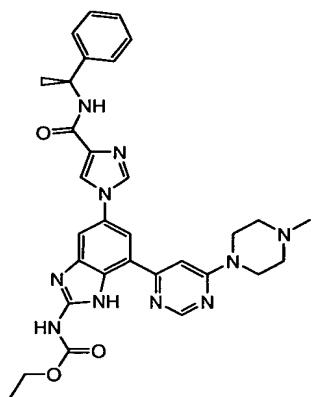
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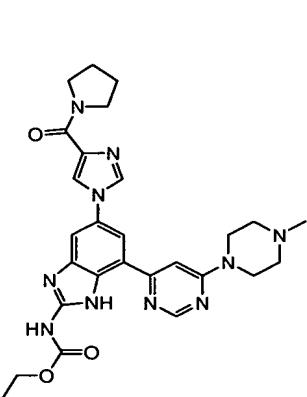
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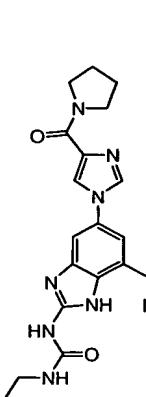
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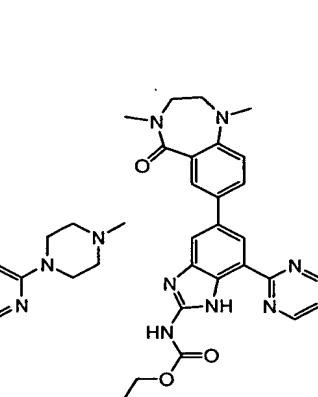
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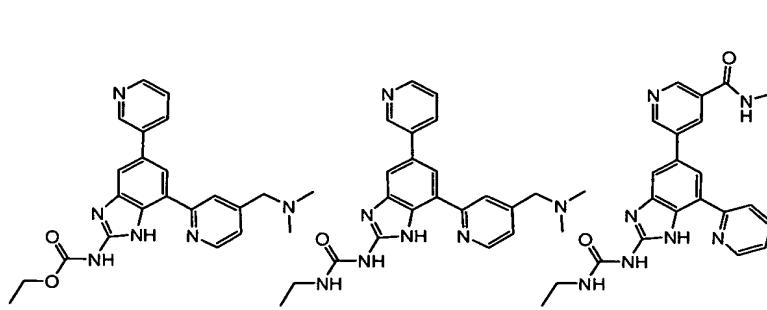
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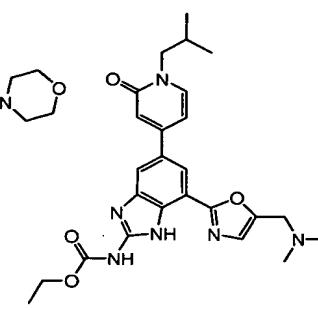
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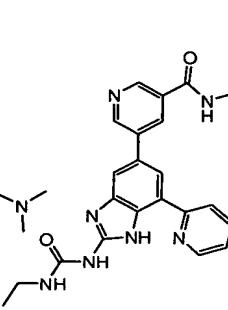
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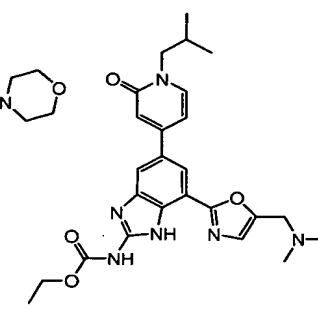
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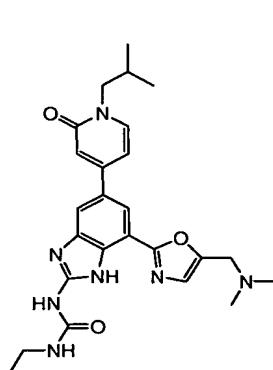
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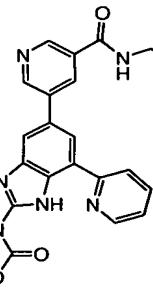
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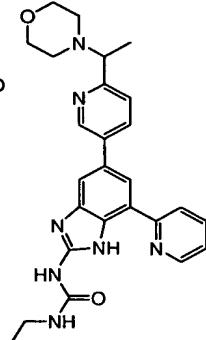
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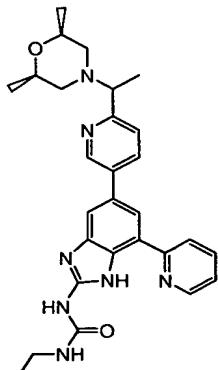
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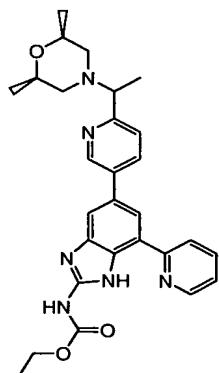
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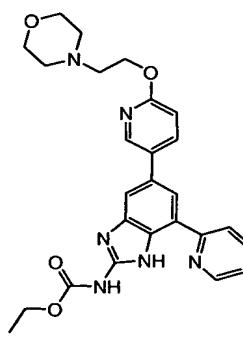
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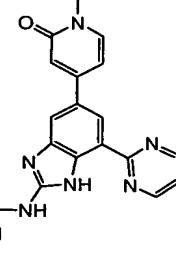
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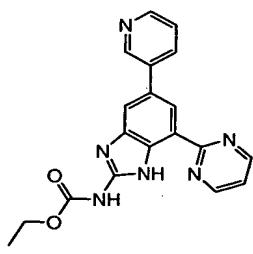
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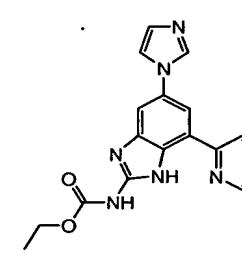
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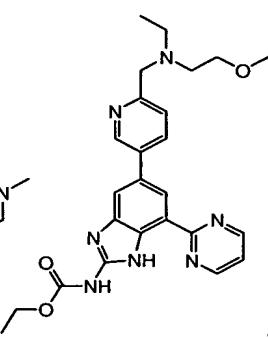
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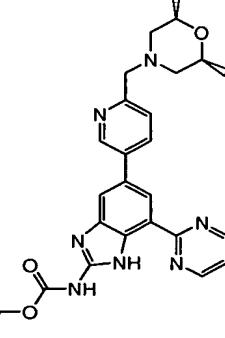
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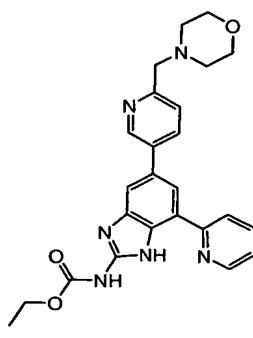
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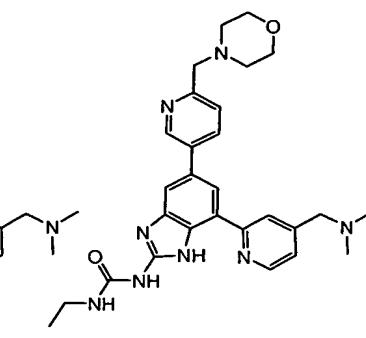
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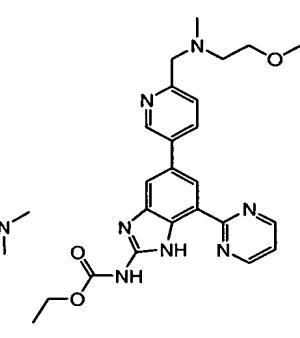
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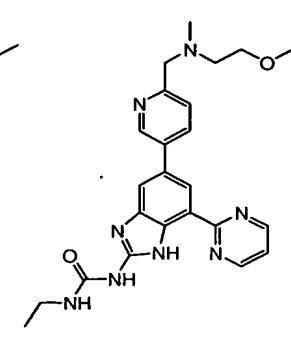
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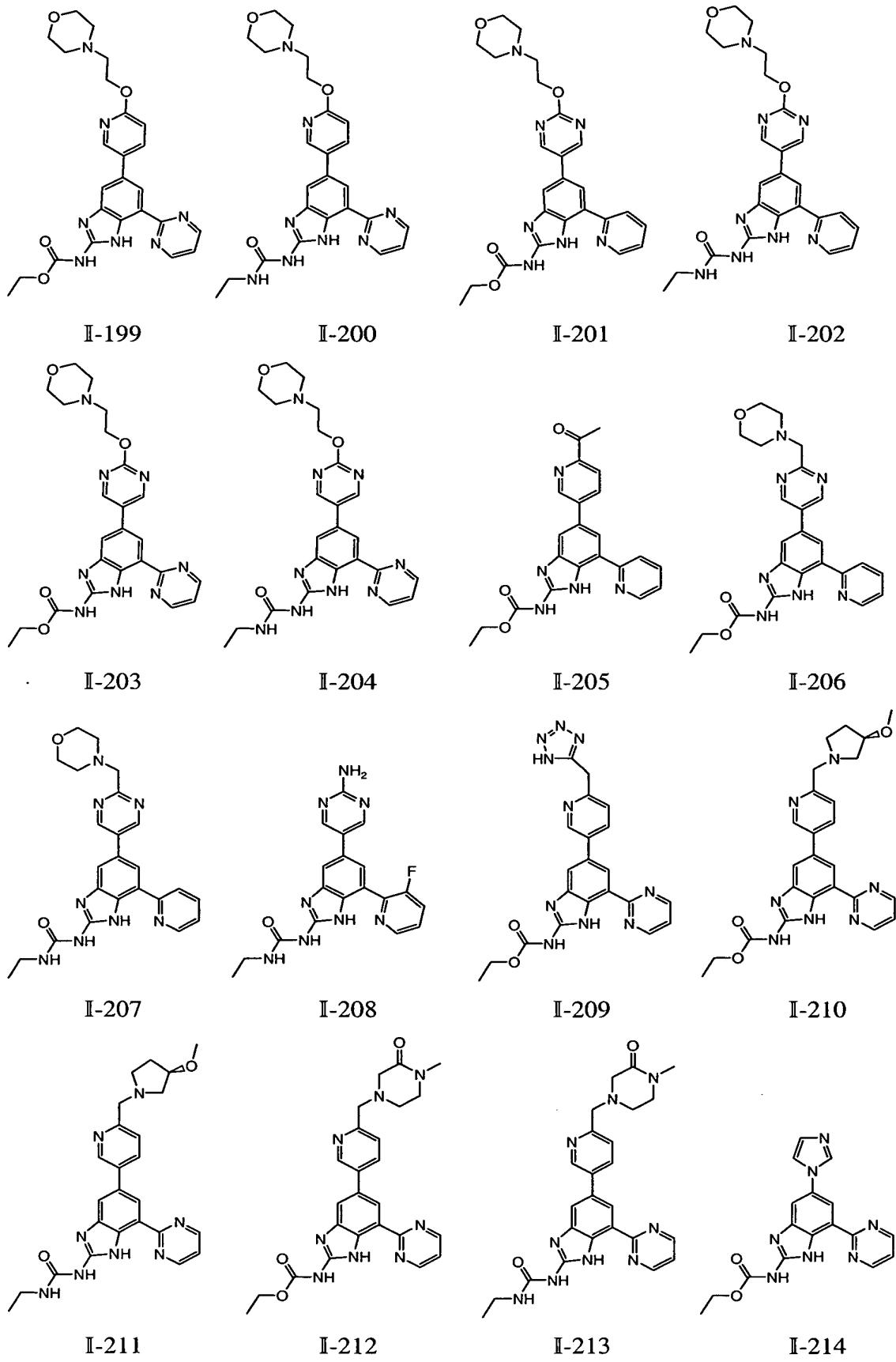
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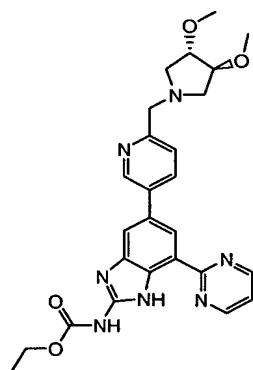


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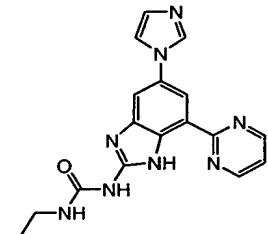


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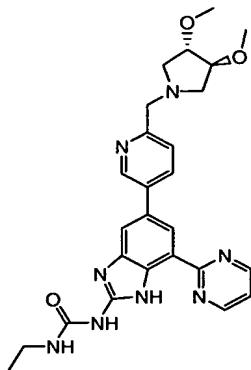




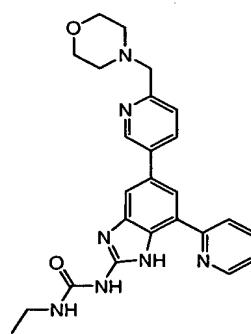
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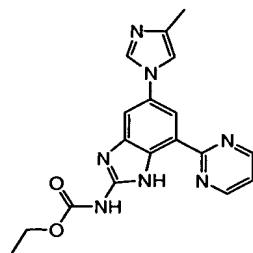
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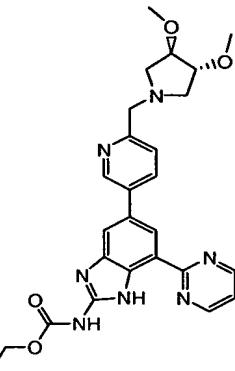
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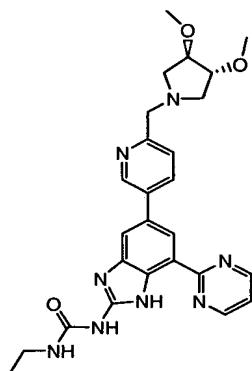
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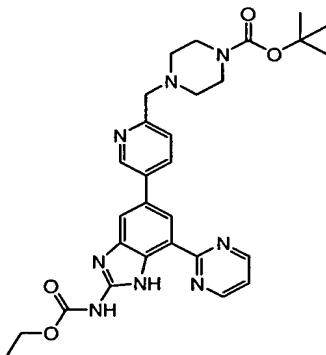
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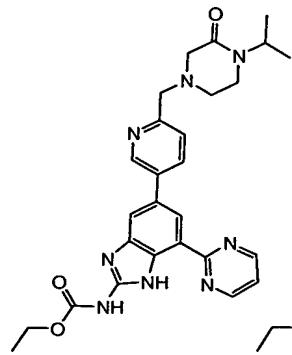
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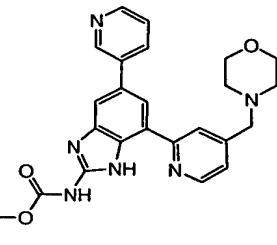
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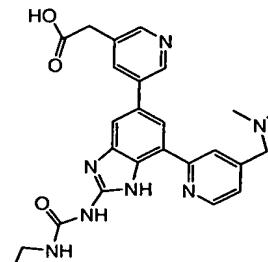
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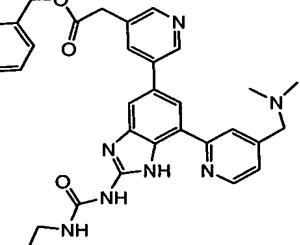
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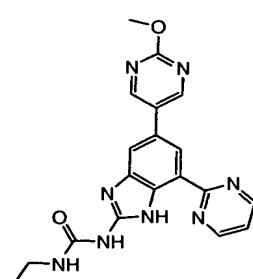
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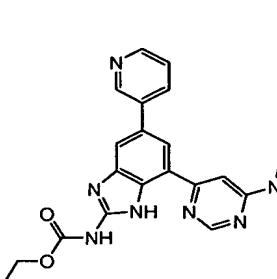
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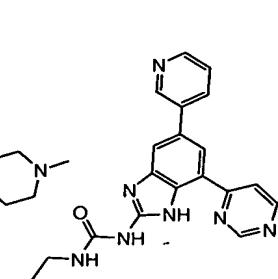
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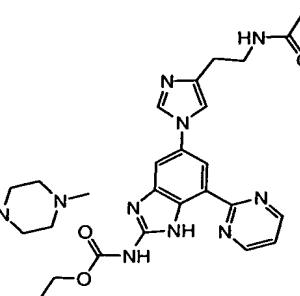
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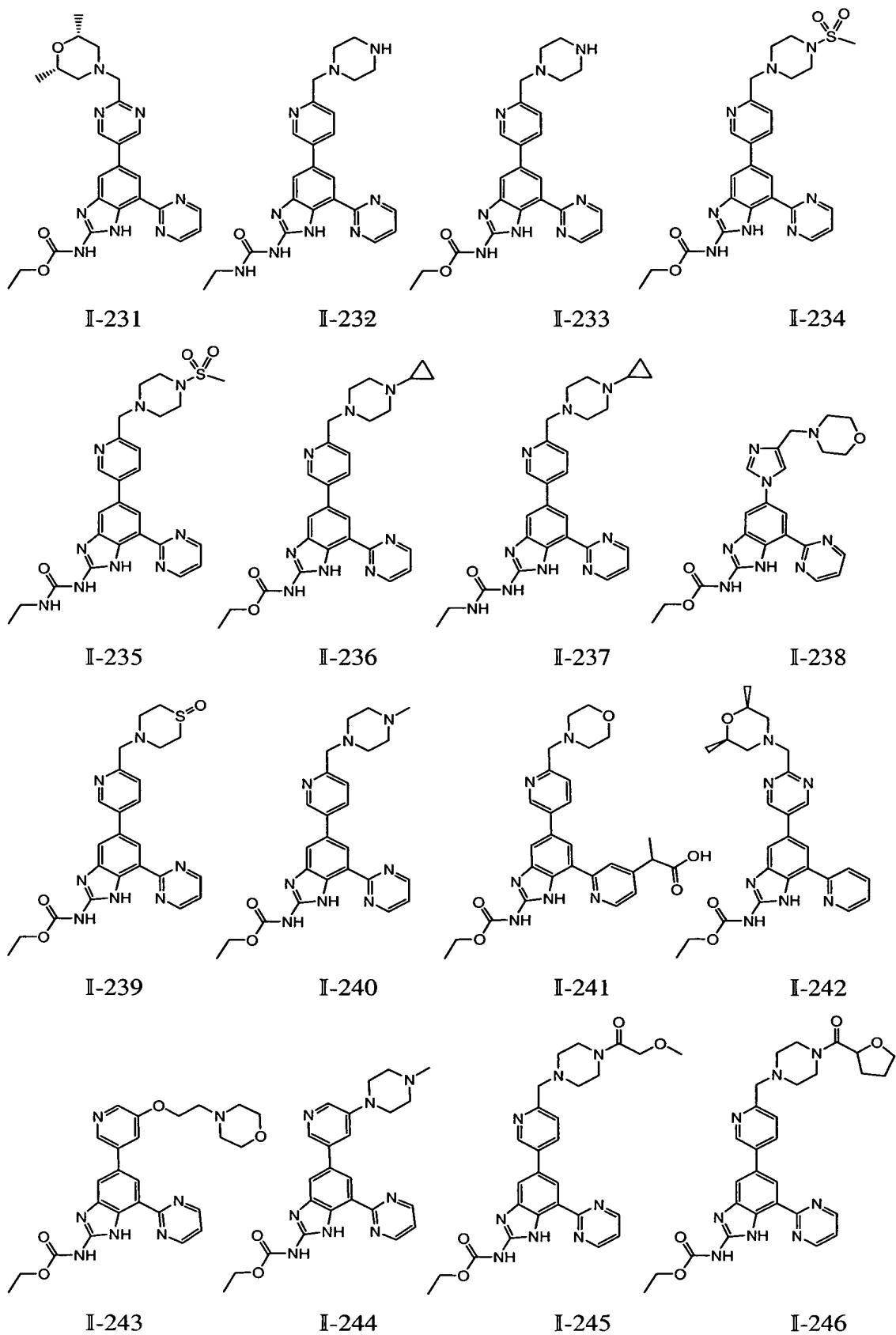
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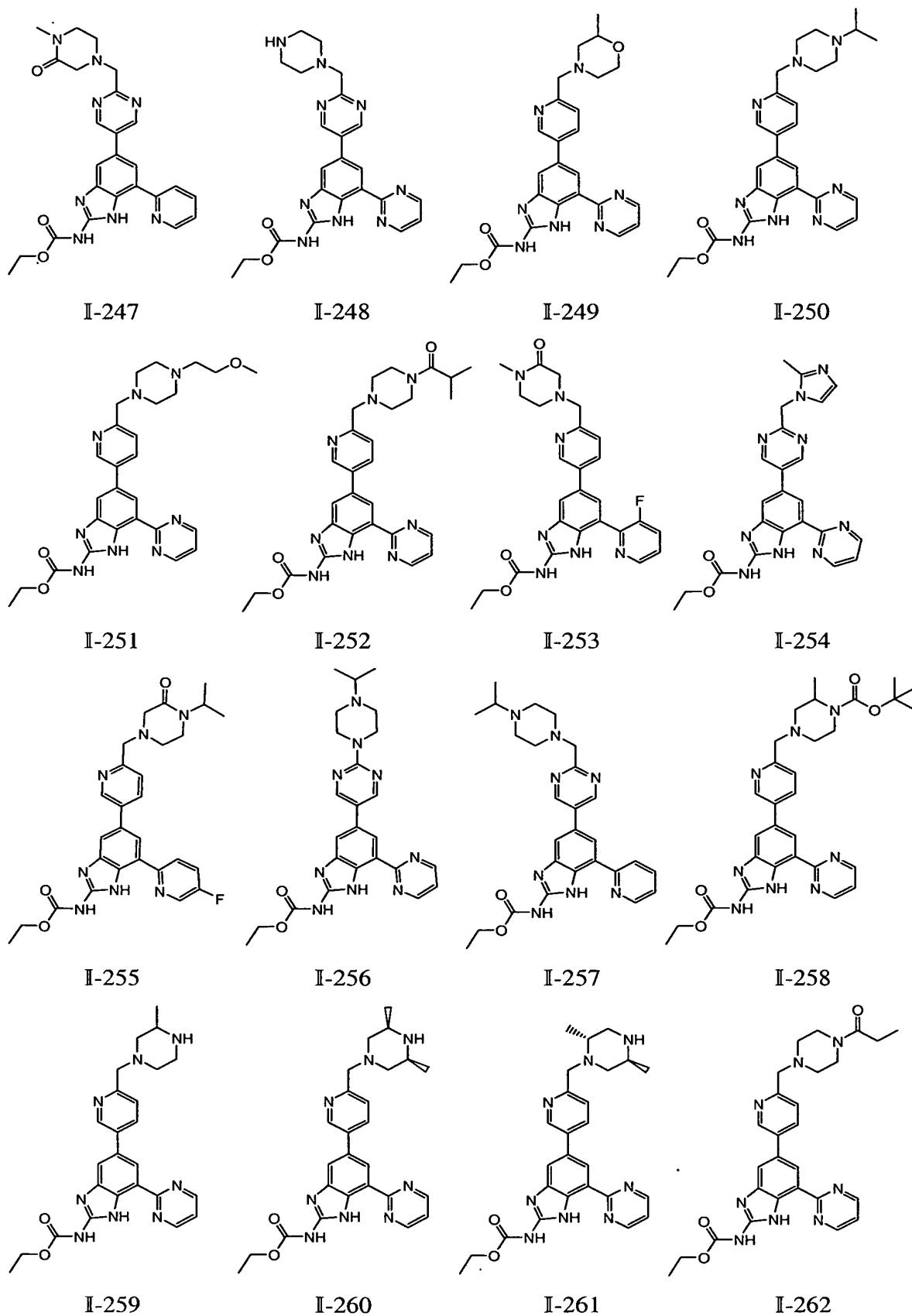


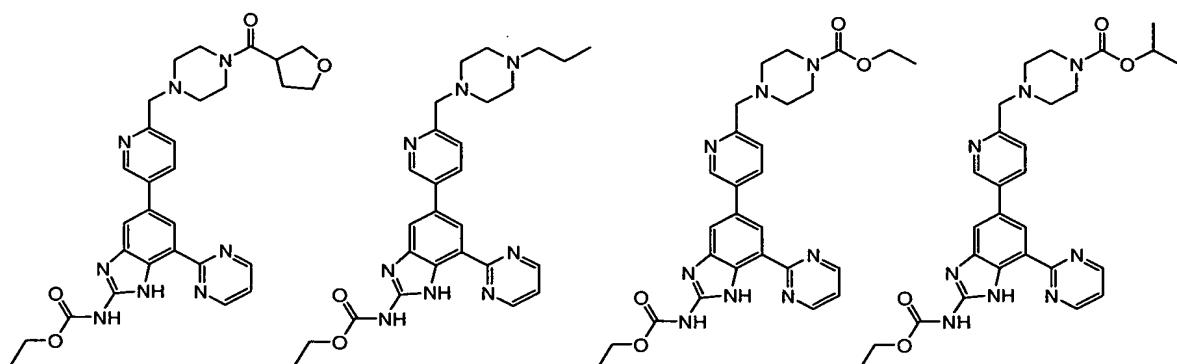
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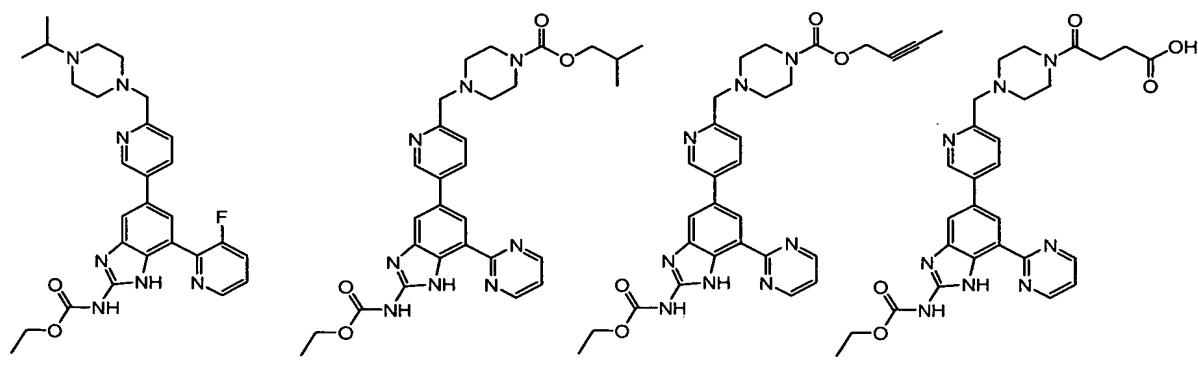


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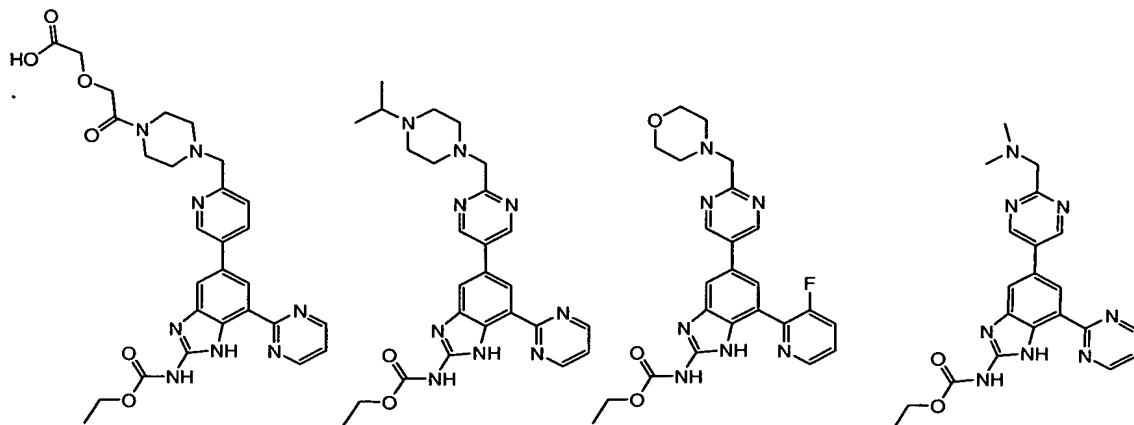


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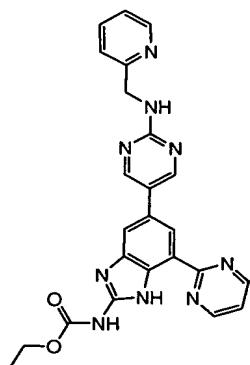


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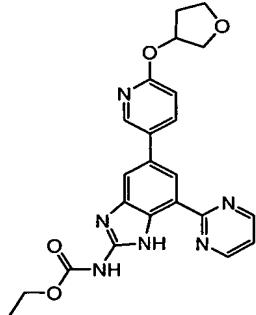
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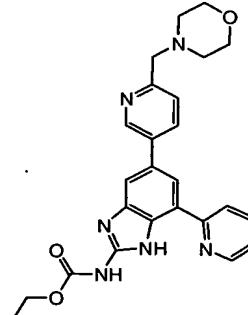
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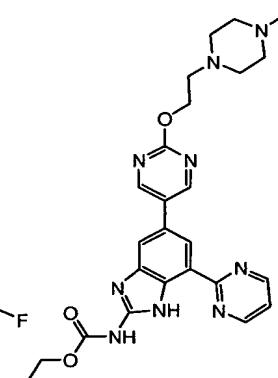
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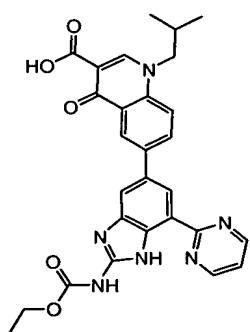
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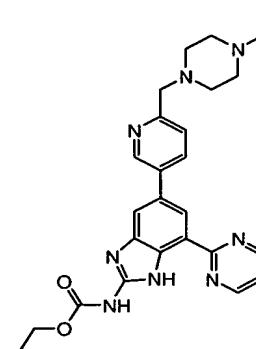
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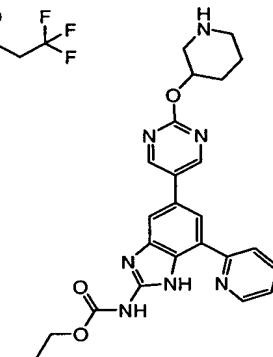
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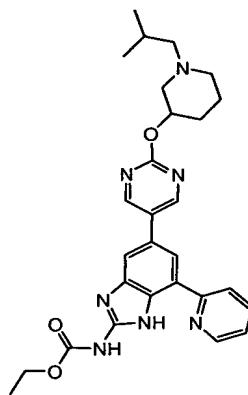
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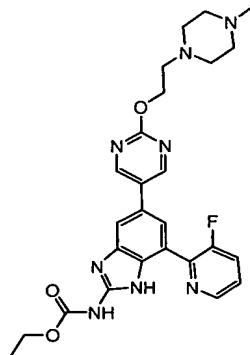
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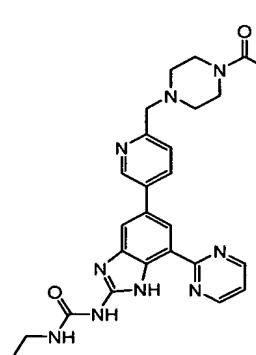
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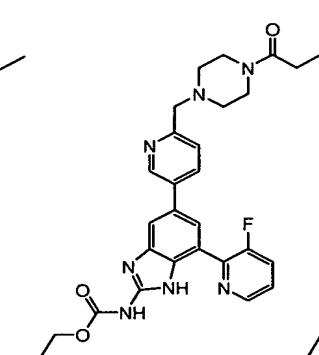
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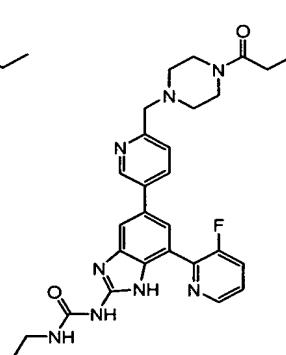
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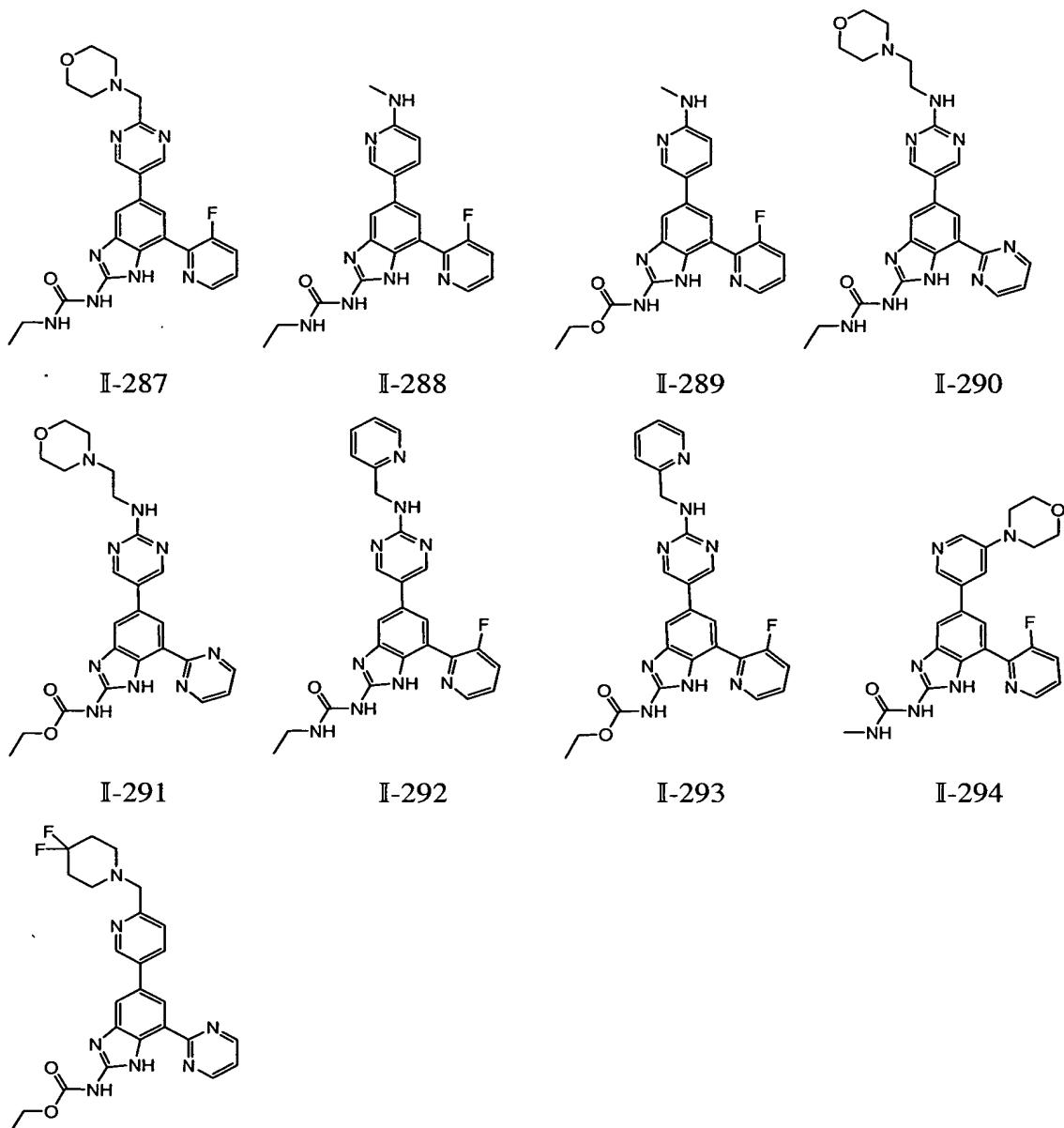
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21. A composition comprising a compound according to claim 1, and a pharmaceutically acceptable carrier, adjuvant, or vehicle.

22. The composition according to claim 21, additionally comprising an additional therapeutic agent selected from an antibiotic, an anti-inflammatory agent, a matrix metalloprotease inhibitor, a lipoxygenase inhibitor, a cytokine antagonist, an immunosuppressant, an anti-cancer agent, an anti-viral agent, a cytokine, a growth factor,

an immunomodulator, a prostaglandin ; an anti-vascular hyperproliferation compound, or an agent which increases the susceptibility of bacterial organisms to antibiotics.

23. A method of inhibiting gyrase activity in a biological sample or in a patient, comprising the step of contacting said biological sample with:

- a) a composition according to claim 21; or
- b) a compound according to claim 1.

24. A method of inhibiting TopoIV activity in a biological sample or in a patient, comprising the step of contacting said biological sample with:

- a) a composition according to claim 21; or
- b) a compound according to claim 1.

25. A method of inhibiting gyrase and TopoIV activity in a biological sample or in a patient, comprising the step of contacting said biological sample with:

- a) a composition according to claim 21; or
- b) a compound according to claim 1.

26. A method of decreasing bacterial quantity in a patient, comprising the step of administering to said patient:

- a) a composition according to claim 21; or
- b) a compound according to claim 1.

27. A method of treating, preventing, or lessening the severity of, a bacterial infection in a patient, comprising the step of administering to said patient:

- a) a composition according to claim 21; or
- b) a compound according to claim 1.

28. The method according to claim 27, wherein the bacterial infection to be treated is characterized by the presence of one or more of the following: *Streptococcus pneumoniae*, *Streptococcus pyogenes*, *Enterococcus faecalis*, *Enterococcus faecium*, *Klebsiella pneumoniae*, *Enterobacter* spp., *Proteus* spp., *Pseudomonas aeruginosa*, *E. coli*, *Serratia marcescens*, *Staphylococcus aureus*, *Coag. Neg. Staph*, *Haemophilus influenzae*,

*Bacillus anthracis, Mycoplasma pneumoniae, Moraxella catarralis, Chlamydia pneumoniae, Legionella pneumophila, Staphylococcus epidermidis, Mycobacterium tuberculosis, or Helcoibacter pylori.*

29. The method according to claim 28, wherein the bacterial infection to be treated is selected from one or more of the following: a urinary tract infection, a respiratory infection, pneumonia, prostatitis, a skin or soft tissue infection, an intra-abdominal infection, a blood stream infection, or an infection of febrile neutropenic patients.

30. The method according to claim 29, further comprising the step of administering to said patient an additional therapeutic agent either as part of a multiple dosage form together with said compound or as a separate dosage form.

31. The method according to claim 28, further comprising the step of administering to said patient an agent that increases the susceptibility of bacterial organisms to antibiotics.